WE CLAIM:

1. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBBXXBX)_n$ or $(XBXXBBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is alanine or glycine; and

n is at least 2.

2. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBXBX)_n$ or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is alanine or glycine; and

n is at least 2.

3. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBBXXBX)_n$, $(XBXXBBBX)_n$, $(XBBXBX)_n$, or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is alanine or glycine;

n is at least 2; and

a single cysteine residue is within three residues of either an N- or C-terminus.

4. The synthetic peptide of **Claim 1**, wherein the peptide comprises

one of the group of D-isomer amino acids, L-isomer amino acids, or a combination of D- and L-isomer amino acids.

5. The synthetic peptide of **Claim 2**, wherein the peptide comprises one of the group of D-isomer amino acids, L-isomer amino acids, or a combination of D- and L-isomer amino acids.

6. The synthetic peptide of **Claim 3**, wherein the peptide comprises one of the group of D-isomer amino acids, L-isomer amino acids, or a combination of D- and L-isomer amino acids.

7. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBBXXBX)_n$ or $(XBXXBBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is any amino acid; and

n is at least 2.

8. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBXBX)_n$ or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is any amino acid; and

n is at least 2.

9. A synthetic peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein the sequence of amino acids is one of the group of $(XBBBXXBX)_n$, $(XBXXBBBX)_n$, $(XBBXBX)_n$, or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is any amino acid;

n is at least 2; and

a single cysteine residue is within three residues of either an N- or C-terminus.

10. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

11. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of **Claim 1** or **Claim 4** is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

12. A method of modulating tumor cell metastasis a growth in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

13. A method of modulating cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

14. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

15. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

16. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 1** or **Claim 4** interacts with at least one sequence or structural domain of said glycosaminoglycan.

17. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

18. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 1** or **Claim 4** is administered to said mammal.

19. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

20. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of **Claim 2** or **Claim 5** is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

21. A method of modulating tumor cell metastasis a growth in a mammal,

wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

22. A method of promoting cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

23. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

24. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

25. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 2** or **Claim 5** in interacts with at least one sequence or structural domain of said glycosaminoglycan.

26. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

27. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 2** or **Claim 5** is administered to said mammal.

28. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

29. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of **Claim 3** or **Claim 6** is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

30. A method of modulating tumor cell metastasis a growth in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

31. A method of promoting cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

32. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

33. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

34. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 3** or **Claim 6** in interacts with at least one sequence or structural domain of said glycosaminoglycan.

35. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a

therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

36. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 3** or **Claim 6** is administered to said mammal.

37. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

38. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of **Claim 7** is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

39. A method of modulating tumor cell metastasis a growth in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

40. A method of promoting cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

41. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

42. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

43. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 7** in interacts with at least one sequence or structural domain of said glycosaminoglycan.

44. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

45. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

46. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

47. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of **Claim 8** is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

48. A method of modulating tumor cell metastasis a growth in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

49. A method of promoting cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

50. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

51. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

52. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 8** in interacts with at least one sequence or structural domain of said glycosaminoglycan.

53. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

54. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

55. A method of modulating heparin or other glycosaminoglycans with anticoagulant activity in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

56. A method of promoting cell attachment or adhesion to natural or synthetic surfaces in a mammal, wherein an effective amount of the peptide of

Claim 9 is covalently linked to a natural or synthetic polymer used to construct a synthetic vein graft surface and wherein said peptide interacts strongly with endothelial cell surface proteoglycans to promote cell attachment and graft endothelialization in vivo in said mammal or in vitro prior to surgical implantation of a vein graft in said mammal.

57. A method of modulating tumor cell metastasis a growth in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

58. A method of promoting cartilage differentiation in mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

59. A method of targeting drugs in a mammal to cell surfaces of endothelium or other cell types expressing proteoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

60. A method of modulating enzymes that act on glycosaminoglycan substrates in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

61. A method of affinity purification of bioactive sequences of a glycosaminoglycan, wherein an effective amount of the peptide of **Claim 9** in interacts with at least one sequence or structural domain of said glycosaminoglycan.

62. A method of modifying endothelial cell pro-coagulant or anti-coagulant functions mediated through glycosaminoglycans in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

63. A method of modulating wound healing in a mammal, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.

64. The synthetic murine serglycin peptide having the sequence YPARRARYQWVRCKP.

65. The synthetic human serglycin peptide having the sequence YPTQRARYQWVRCNP.

66. The synthetic peptide of **Claim 64**, wherein the peptide comprises one of the group of D-isomer amino acids, L-isomer amino acids, or a combination of D- and L-isomer amino acids.

67. The synthetic peptide of **Claim 65**, wherein the peptide comprises one of the group of D-isomer amino acids, L-isomer amino acids, or a combination of D- and L-isomer amino acids.

68. A synthetic nonconcatameric peptide with a high affinity for glycosaminoglycans and proteoglycans, wherein Cardin sites are separated by at least one of any amino acid and wherein the sequence of said synthetic peptide is at least two of the group of $(XBBBXXBX)_n$, $(XBXXBBBX)_n$, $(XBBXBX)_n$, or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is alanine or glycine; and

n is at least 1 for each of the two groups.

69. A synthetic nonconcatameric peptide with a high affinity for

glycosaminoglycans and proteoglycans, wherein Cardin sites are separated by at least one of any amino acid and wherein the sequence of said synthetic peptide is at least two of the group of $(XBBBXXBX)_n$, $(XBXXBBBX)_n$, $(XBBXBX)_n$, or $(XBXBBX)_n$, wherein:

B is one of the group of arginine, lysine, or a combination of lysine and arginine;

X is alanine or glycine;

n is at least 1 for each of the two groups; and

a single cysteine residue is within three residues of either an N- or C-terminus, either within a Cardin sequence or extended beyond the Cardin sequence.

70. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 1** is administered to said mammal.

71. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 2** is administered to said mammal.

72. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 3** is administered to said mammal.

73. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 7** is administered to said mammal.

74. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 8** is administered to said mammal.

75. A method of blocking tissue uptake and clearance of heparin or other glycosaminoglycans in a mammal to increase heparin half-life in circulation, wherein a therapeutically effective amount of the peptide of **Claim 9** is administered to said mammal.